

**CONFERENCE SS04
ELECTRO-ACTIVE POLYMER ACTUATORS
ORAL PRESENTATION**

ELECTROMECHANICALLY ACTIVE POLYMER BLENDS FOR ACTUATION

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Actuator mechanisms that are lightweight, durable, and efficient are needed to support telerobotic requirements for future NASA missions. In this work, we present a series of electromechanically active polymer blends that can potentially be used as actuators for a variety of applications. This polymer blend combines an electrostrictive graft-elastomer with a ferroelectric poly(vinylidene-trifluoroethylene) polymer. Structure-property analysis of the dielectric, mechanical and electromechanical properties as a function of temperature and frequency will be conducted for this series of polymer blends. Bending actuator devices will be fabricated from the blends and the effect of composition on actuation strain will be demonstrated. The combination of ferroelectricity and electrostriction in a single material system may enable the design of blend compositions with optimal strain and mechanical and dielectric properties for specific actuator applications.

Key Words: Electroactive, polymers, electrostriction, ferroelectric, actuators